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Supporting Self-management of ASTHMA CARE

Asthma is a major public health concern, with an estimated 18.8 million adults in the United States having the disease. Asthma can be controlled with a variety of effective treatment options; however, only half the people with asthma report their asthma is well controlled. Uncontrolled asthma leads to high direct and indirect costs as well as decreased quality of life. The pathophysiology of asthma, current asthma practice guidelines, and common barriers to self-management will be discussed. Through use of motivational interviewing techniques and knowledge of available self-management tools, the home care clinician is poised to help increase self-management of asthma, decrease hospitalizations, and improve quality of life.

The diagnosis of asthma is a major public health concern with a high socioeconomic burden (Storms et al., 2015). The number of adults in the United States with asthma is estimated to be 18.8 million (Centers for Disease Control and Prevention [CDC], 2014) and there are 14.2 million asthma-related visits yearly to primary care providers (PCPs). During 2010, there were 439,000 hospital admissions for asthma with an average length of stay of 3.6 days (CDC, 2015a), and in 2011, there were 1.8 million emergency department visits (CDC, 2011). In 2013, the mortality rate due to asthma was 3630 per year with about 1.1 deaths per 100,000 (CDC, 2015b). Annual healthcare costs, mainly for prescription drugs and hospital care are approximately $56 billion, and also include indirect costs of $5.9 billion annually due to lost productivity. The average cost per year per person with asthma is $3,259 (CDC, 2014). Finally, uncontrolled asthma is disruptive to family life, and the difficulty breathing that is the hallmark of asthma can be frightening for the patient and family.

With knowledge of effective treatment modalities and adherence to prescribed medications, asthma can be controlled; however only 50% of individuals with asthma report their asthma is controlled.

With knowledge of effective treatment modalities and adherence to prescribed medications, asthma can be controlled; however, only 50% of individuals with asthma report their asthma is controlled (CDC, 2014). Home care clinicians are poised to be the link between the PCP and the homebound patient to promote effective self-management of asthma. In this article, the pathophysiology of asthma, current asthma practice guidelines, and common barriers to self-management will be discussed. Finally, this article explains six strategies for home care clinicians to promote optimal asthma management for home care patients.

Pathophysiology

Asthma affects the small passageways in the lungs known as bronchioles. Smooth muscle contraction in the bronchiole walls, as well as excess mucus production, reduces the diameter of the bronchioles, decreasing airflow in and out of the lungs (Figure 1), (Porth, 2014). During an exacerbation of asthma there is a hyper activation of the immune system. Mast cells release excess amounts of histamine, leukotrienes, interleukins, and prostaglandins. These chemicals in turn cause excess mucus production and spasms of the smooth muscle of the bronchioles (Porth). The causes, or triggers for bronchial asthma are different for each person and may include allergens such as pollen and pet dander, chemical exposures, cold temperatures, stress, and exercise. Triggers may also include things in the environment such as smoke, dust mold, trees, grass, or food. It is important to help the patient identify what their personal triggers are and educate them on how to decrease or eliminate exposure (American Lung Association, 2015).

Asthma Guidelines

The Guideline for the Diagnosis and Management of Asthma Report states that an essential component of asthma management is self-management (U.S. Department of Health and Human Services [USDHHS], 2007). The goal of self-management is to have asthma symptoms controlled so individuals can lead a productive, active life and prevent long-term lung damage (Peláez et al., 2014). Asthma self-management education should be incorporated into all aspects of asthma care that begins at the time of the initial diagnosis and continues through follow-up care (USDHHS, 2007). Methods of controlling asthma symptoms include: use of daily controller medications such as inhaled corticosteroids; environmental control of asthma triggers such as pollen, dust, cigarette smoke; and leading a healthy lifestyle (Peláez et al., 2014).

Key components for asthma management include: assessment and evaluation of the patient's current asthma status; self-management of symptoms and controlling of factors that provoke asthma symptoms; and an individualized treatment plan. Treatment is based on: the intensity of the disease, how well someone is treated for asthma, and how well their body responds to medical treatment. Intermittent asthma is asthma that is well controlled without long-term

control medication. Persistent severity includes long-term use of control medication, and uncontrolled asthma without a long-term controller (USDHHS, 2007). The percentage of individuals with persistent asthma severity is 65%, whereas 35% of individuals are considered to have intermittent asthma severity (CDC, 2015c). Asthma is considered well managed if the use of rescue inhalers is less than twice a week.

The purpose of ongoing assessment of patients with asthma is to determine if goals are being met and the patient is maintaining near-normal activities of everyday living (USDHHS, 2007c). The goals for asthma management include: the patient and family's expectations of asthma care are being met, minimal need for emergency room visits or hospitalizations, prevention of progressive loss of lung function, and optimal pharmacotherapy with minimal or no adverse effects. The role of the home care clinician is to assess ongoing asthma control, assess the patient's ability to recognize symptom control, and for the patient to be able to recognize inadequate asthma control (USDHHS, 2007c).

Barriers to Self-management

Barriers to following an individualized asthma action plan include: lack of education, unpleasant side effects of medications, personal views and/or beliefs about the disease and its treatment, and a weak or nonexistent PCP relationship. Barriers related to using long-term inhalers include: fear of adverse side effects, fear of addiction, belief the medication does not work, or is not needed (Peláez et al., 2015).

Maintaining a Healthy Lifestyle

The American Lung Association (2015) recommends the following preventive lifestyle choices for people with asthma:

1. If you smoke, stop now! (21% of people with asthma smoke)
2. Get your flu vaccine every year
3. Get your pneumonia vaccine as recommended by your PCP
4. Avoid high pollen times and extremes in weather
5. Avoid food allergens
6. Reduce exposure to pet allergens
7. Avoid mold
8. Avoid pests such as dust mites, cockroaches, and rodents
9. Avoid strong odors
10. Avoid stress
11. Use an air purifier
12. Keep your house clean

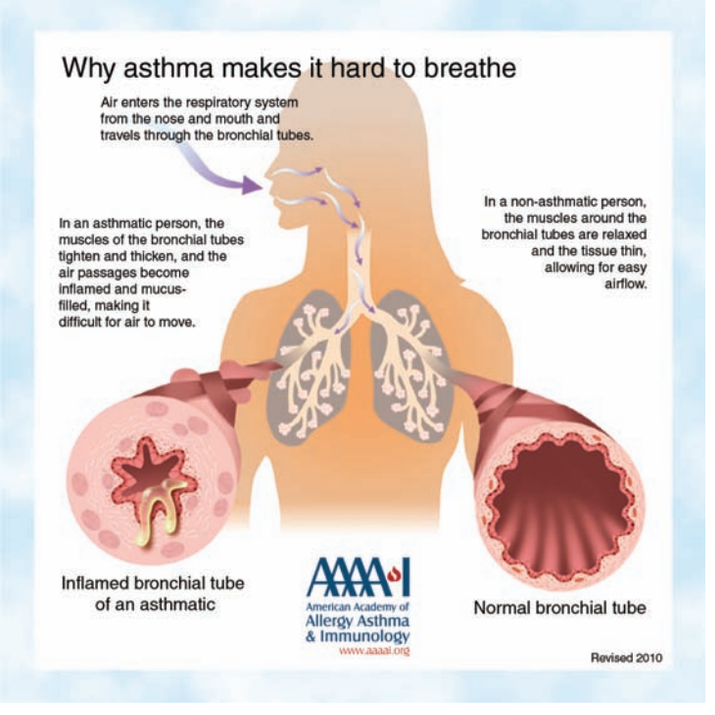


Figure 1. Why asthma makes it hard to breathe.
Reprinted from https://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/illustrations/Asthmaad-FINAL.pdf. Copyright 2010 by The American Academy of Allergy Asthma and Immunology.

Home Care Tools

The following are tools home care clinicians can use in the assessment, intervention, and evaluation of asthma management. These tools include: Take the Asthma Control Test™ (ACT), asthma triggers, journaling to identify triggers, asthma action plan, and motivational interviewing.

Take the Asthma Control Test™ (ACT)

The Take the Asthma Control Test™ (ACT) for people 12 years and older is one tool to assess how well a patient's asthma is controlled (Nathan, 2004). The five-question tool assesses asthma control including symptoms and usage of inhalers or nebulizer treatments. It also asks patients to

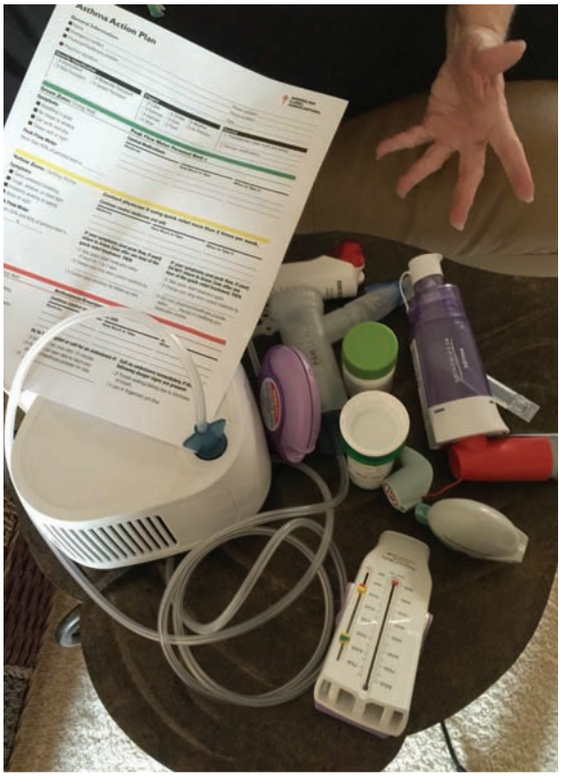
rate their asthma control during the past 4 weeks. Optum provides this guide to assess asthma control and it may be accessed at amihealthy.com, under the "Smart Measurement System." Patients can log in as a guest, take the survey, and receive a score, and see all reporting features (Optum, 2015).

Asthma Triggers, Journaling to Identify Triggers

The American Lung Association (2015) has created a form: *Avoiding and Controlling Your Asthma Triggers* (Figure 2), which identifies specific triggers and how exposure to triggers may be reduced or avoided. Another tool that may be helpful for patients is to keep a journal to help identify triggers and associated symptoms. In this journal, include what is and is not helpful about the asthma action plan. Encourage the patient to bring the journal to their PCP appointments.

Asthma Action Plan

The Asthma Action Plan includes warning zones coded in green, yellow, and red. The green zone indicates the patient's asthma symptoms are controlled, and the patient is able to work, carry on daily activities, and sleep well at night without coughing or wheezing. The yellow zone indicates a patient may have some difficulty with carrying out activities, including problems with breathing, coughing, wheezing, and chest tightness. Asthma symptoms may increase at night with disruptive sleep. When a patient is in the yellow zone, medication changes may be necessary. The red zone is a "medical alert" when things are not improving despite using prescribed medications. In the red zone, the patient is having problems with breathing, is unable to work or play, is getting worse instead of better, and medicine is not helping. The patient is encouraged to go to the hospital or call for an ambulance if they have been in the red zone for 15 minutes and they have not been able to reach their PCP for help (USDHHS, 2007a) (Figure 3). Encourage patients to keep the asthma action plan in a visible place, such as on the refrigerator door. Patients should inform family members about what their action plan is and what to do if help is needed. Patients can also carry their asthma action plan in a wallet card (Figure 4) (USDHHS, 2007b).



It is vital for patients to understand the names and purpose of each medication they take and when and how to take them. Use language such as "controller" for medicine that is used to control symptoms and is taken every day, even when the patient is feeling well; and "rescue" inhaler that is used to rescue a patient from an asthma attack (American Lung Association, 2015). Working with the patient's PCP through medication reconciliation and by relating symptoms and self-management efforts will help the patient achieve asthma control and strengthen the relationship with the PCP.

Motivational Interviewing

Home care clinicians can be effective change agents, assisting individuals in their homes to promote self-managed asthma care. Traditionally, clinicians have educated patients by telling them what to do and what not to do to achieve a healthier outcome. This method of teaching is effective for few people and may increase resistance from patients who are not willing or ready to change their behavior (Borrelli et al., 2007). Changing behavior is difficult due to myriad issues. An integrative review by Spoelstra et al. (2015) of best

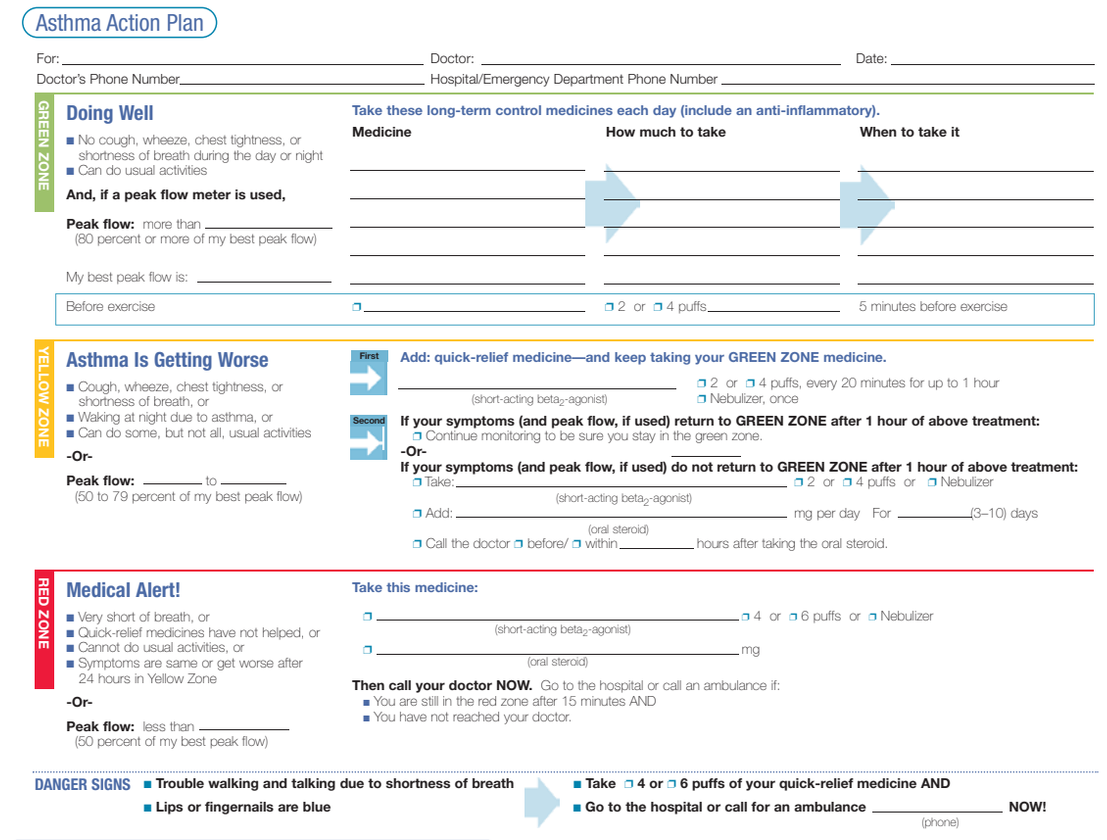
Avoiding and Controlling Your Asthma Triggers

Using the tool on the following pages, find the triggers that cause your symptoms. Then, decide which of the tips provided might work best for you. Some can be done right away, and others take planning. Use the "My Solutions" area to write down your own ideas and your personal plan for taking action.

Asthma Trigger and Control Tips	*My Solutions*
☐ **Smoking and Secondhand Smoke**	
☐ Make a plan to quit smoking! Get help by calling **1-800-LUNGUSA** or visiting **www.ffsonline.**org. ☐ Ask others not to smoke near me. ☐ Do not allow anyone to smoke in my home, car or work area. ☐ Avoid the homes and cars of people who do allow smoking. ☐ Patronize smokefree businesses; or if smoking is allowed, eat or sit in nonsmoking areas. ☐ Avoid the designated smoking area at work. ☐ Support local efforts for making all public places smokefree. (Learn more at **www.Lung.org**. Search for Lung Action Network.)	
☐ **Wood Smoke and Fires**	
☐ Avoid burning wood indoors. ☐ Allow for airflow around fireplaces or vented appliances. ☐ Pay attention to air quality forecasts during wildfires and avoid going outside if air pollution levels are poor.	
☐ **Outdoor Air Pollution**	
☐ Check the air quality index (AQI) forecast daily. The color-coded system will let me know when pollution levels are unhealthy. ☐ Limit time and exercise/strenuous activities outdoors when the AQI is orange (unhealthy); and avoid outdoor activities when the AQI is red, purple or maroon. ☐ Always avoid exercising around high-traffic areas. ☐ Download the American Lung Association State of the Air app at **www.stateoftheair.org** to check the AQI anytime from my smartphone.	
☐ **Dust and Dust Mites**	
☐ Cover my mattress, box spring and pillows in dust-proof, zippered cases. ☐ Wash all bedding (sheets, blankets, bedcovers) in hot water (130°F) weekly. ☐ Use washable area rugs in the bedroom instead of carpet. ☐ Wash curtains often. ☐ Maintain indoor humidity between 30 to 50 percent. ☐ Use air conditioner or dehumidifier to lower humidity in my bedroom and home (and clean humidifiers regularly). ☐ Dust (damp cloth) and vacuum twice a week. Use a vacuum with a HEPA filter or a central vacuum that vents outside. **NOTE: If you have a dust mite allergy, you should not vacuum yourself or be in a room that is being vacuumed.** ☐ Avoid upholstered furniture, especially in the bedroom. ☐ Store out-of-season clothes in a box or garment bag. ☐ Wear a protective face mask in dusty areas at work.	
☐ **Cockroaches**	
☐ Take out the trash every day. ☐ Keep food in sealed containers. ☐ Clean up spills and crumbs right away. ☐ Clean up standing water in dish racks, sinks, showers and plant saucers. ☐ Don't leave pet food out. ☐ Use roach baits (but not sprays or foggers!). ☐ Seal openings where bugs can get in (outside faucets, holes, around window seals).	

Asthma Trigger and Control Tips	*My Solutions*
☐ **Pets, Animal Dander**	
☐ Avoid animals with fur or feathers. ☐ Do not let pets inside my home. ☐ Keep the pet I have out of my bedroom.	
☐ **Mold and Mildew**	
☐ Keep my home well ventilated and free of dampness. ☐ Fix leaks right away. ☐ Clean mildew from tiles and shower curtains with detergent or soap. ☐ Use an exhaust fan or open a window to get rid of moisture in bathrooms and kitchens. ☐ Clean the water basins of air conditioners, humidifiers and refrigerators often. ☐ Limit the number of plants in my home and work area. (Mold likes soil.) ☐ Vent the clothes dryer to the outside. ☐ Alert management to mold problems at work.	
☐ **Pollen**	
☐ Do not keep fresh flowers with a lot of pollen inside my home or near my work area. ☐ Keep doors and windows closed during pollen season, especially during the day. ☐ Run my air conditioner unit one half-hour before I plan to use a room. ☐ After being outside for a long time, take a shower and change clothes when I come inside on high pollen and mold count days. ☐ Limit outdoor activities when pollen levels are high.	
☐ **Strong Odors (e.g., hairspray, air fresheners, cleaning products)**	
☐ Use unscented products. ☐ Ask those living or working around me not to use scented products. ☐ Avoid areas with strong smells when possible. ☐ Use a fan when I must be near a strong odor. ☐ Keeps smells from spreading by closing off areas where the odor is located.	
☐ **Respiratory Infections**	
☐ Wash my hands frequently to prevent infections. ☐ Call my health-care provider if I think I have a respiratory infection. ☐ Get a flu shot every year, and a pneumonia vaccine if age 65 or older or my health-care provider advises it.	
☐ **Physical Activity/Exercise**	
☐ Start slowly, do a good warm up. ☐ Ask my health-care provider about taking medicine before exercising or physical exertion at work. ☐ Take breaks as needed.	
☐ **Strong Emotions (e.g., stress, crying and even laughing)**	
☐ Practice good general health habits to reduce stress. ☐ Avoid stressful situations. ☐ Use relaxation exercises and techniques. ☐ Take advantage of work breaks and lunch hour.	
☐ **Cold Air/Extreme Heat**	
☐ Cover my mouth and nose with a scarf when outdoors. ☐ Avoid being outside when weather is too cold or too hot.	

Figure 2. Avoiding and controlling your asthma triggers.
Reprinted from http://action.lung.org/site/DocServer/avoid-control-asthma-triggers-en.pdf Copyright 2013 by The American Lung Association.



Asthma Action Plan

For: _____ Doctor: _____ Date: _____

Doctor's Phone Number _____ Hospital/Emergency Department Phone Number _____

GREEN ZONE

Doing Well

- No cough, wheeze, chest tightness, or shortness of breath during the day or night
- Can do usual activities

And, if a peak flow meter is used,

Peak flow: more than _____ (80 percent or more of my best peak flow)

My best peak flow is: _____

Take these long-term control medicines each day (include an anti-inflammatory).

Medicine	How much to take	When to take it
Before exercise	❒ _____	❒ 2 or ❒ 4 puffs _____ 5 minutes before exercise

YELLOW ZONE

Asthma Is Getting Worse

- Cough, wheeze, chest tightness, or shortness of breath, or
- Waking at night due to asthma, or
- Can do some, but not all, usual activities

-Or-

Peak flow: _____ to _____ (50 to 79 percent of my best peak flow)

First — **Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.**

_____ (short-acting beta$_2$-agonist) ❒ 2 or ❒ 4 puffs, every 20 minutes for up to 1 hour ❒ Nebulizer, once

Second — **If your symptoms (and peak flow, if used) return to GREEN ZONE after 1 hour of above treatment:**

❒ Continue monitoring to be sure you stay in the green zone.

-Or-

If your symptoms (and peak flow, if used) do not return to GREEN ZONE after 1 hour of above treatment:

❒ Take: _____ (short-acting beta$_2$-agonist) ❒ 2 or ❒ 4 puffs or ❒ Nebulizer

❒ Add: _____ (oral steroid) mg per day For _____(3–10) days

❒ Call the doctor ❒ before/ ❒ within _____ hours after taking the oral steroid.

RED ZONE

Medical Alert!

- Very short of breath, or
- Quick-relief medicines have not helped, or
- Cannot do usual activities, or
- Symptoms are same or get worse after 24 hours in Yellow Zone

-Or-

Peak flow: less than _____ (50 percent of my best peak flow)

Take this medicine:

❒ _____ (short-acting beta$_2$-agonist) ❒ 4 or ❒ 6 puffs or ❒ Nebulizer

❒ _____ (oral steroid) mg

Then call your doctor NOW. Go to the hospital or call an ambulance if:

- You are still in the red zone after 15 minutes AND
- You have not reached your doctor.

DANGER SIGNS

- **Trouble walking and talking due to shortness of breath**
- **Lips or fingernails are blue**

- **Take ❒ 4 or ❒ 6 puffs of your quick-relief medicine AND**
- **Go to the hospital or call for an ambulance _____ (phone) NOW!**

How To Control Things That Make Your Asthma Worse

This guide suggests things you can do to avoid your asthma triggers. Put a check next to the triggers that you know make your asthma worse and ask your doctor to help you find out if you have other triggers as well. Then decide with your doctor what steps you will take.

Allergens

❒ **Animal Dander**

Some people are allergic to the flakes of skin or dried saliva from animals with fur or feathers.

The best thing to do:

- Keep furred or feathered pets out of your home.

If you can't keep the pet outdoors, then:

- Keep the pet out of your bedroom and other sleeping areas at all times, and keep the door closed.
- Remove carpets and furniture covered with cloth from your home. If that is not possible, keep the pet away from fabric-covered furniture and carpets.

❒ **Dust Mites**

Many people with asthma are allergic to dust mites. Dust mites are tiny bugs that are found in every home—in mattresses, pillows, carpets, upholstered furniture, bedcovers, clothes, stuffed toys, and fabric or other fabric-covered items.

Things that can help:

- Encase your mattress in a special dust-proof cover.
- Encase your pillow in a special dust-proof cover or wash the pillow each week in hot water. Water must be hotter than 130° F to kill the mites. Cold or warm water used with detergent and bleach can also be effective.
- Wash the sheets and blankets on your bed each week in hot water.
- Reduce indoor humidity to below 60 percent (ideally between 30—50 percent). Dehumidifiers or central air conditioners can do this.
- Try not to sleep or lie on cloth-covered cushions.
- Remove carpets from your bedroom and those laid on concrete, if you can.
- Keep stuffed toys out of the bed or wash the toys weekly in hot water or cooler water with detergent and bleach.

❒ **Cockroaches**

Many people with asthma are allergic to the dried droppings and remains of cockroaches.

The best thing to do:

- Keep food and garbage in closed containers. Never leave food out.
- Use poison baits, powders, gels, or paste (for example, boric acid). You can also use traps.
- If a spray is used to kill roaches, stay out of the room until the odor goes away.

❒ **Indoor Mold**

- Fix leaky faucets, pipes, or other sources of water that have mold around them.
- Clean moldy surfaces with a cleaner that has bleach in it.

❒ **Pollen and Outdoor Mold**

What to do during your allergy season (when pollen or mold spore counts are high):

- Try to keep your windows closed.
- Stay indoors with windows closed from late morning to afternoon, if you can. Pollen and some mold spore counts are highest at that time.
- Ask your doctor whether you need to take or increase anti-inflammatory medicine before your allergy season starts.

Irritants

❒ **Tobacco Smoke**

- If you smoke, ask your doctor for ways to help you quit. Ask family members to quit smoking, too.
- Do not allow smoking in your home or car.

❒ **Smoke, Strong Odors, and Sprays**

- If possible, do not use a wood-burning stove, kerosene heater, or fireplace.
- Try to stay away from strong odors and sprays, such as perfume, talcum powder, hair spray, and paints.

Other things that bring on asthma symptoms in some people include:

❒ **Vacuum Cleaning**

- Try to get someone else to vacuum for you once or twice a week, if you can. Stay out of rooms while they are being vacuumed and for a short while afterward.
- If you vacuum, use a dust mask (from a hardware store), a double-layered or microfilter vacuum cleaner bag, or a vacuum cleaner with a HEPA filter.

❒ **Other Things That Can Make Asthma Worse**

- Sulfites in foods and beverages: Do not drink beer or wine or eat dried fruit, processed potatoes, or shrimp if they cause asthma symptoms.
- Cold air: Cover your nose and mouth with a scarf on cold or windy days.
- Other medicines: Tell your doctor about all the medicines you take. Include cold medicines, aspirin, vitamins and other supplements, and nonselective beta-blockers (including those in eye drops).

Figure 3. Asthma action plan.
Reprinted from http://www.nhlbi.nih.gov/files/docs/public/lung/asthma_actplan.pdf. Copyright 2007 by National Heart, Lung, and Blood Institute; National Institutes of Health; U.S. Department of Health and Human Services.

The causes, or triggers for bronchial asthma are different for each person and may include allergens such as pollen and pet dander, chemical exposures, cold temperatures, stress, and exercise.

practices for medication adherence found a combination of motivational interviewing (MI), cognitive behavioral therapy, and patient education that focuses on knowledge and self-management skills, may promote positive outcomes for medication adherence.

MI was developed as a modality of therapy for individuals in drug or alcohol therapy. It has also been used in healthcare settings to improve health behaviors related to a variety of issues such as diet and exercise behaviors and to improve medication adherence (Spoelstra et al., 2015). MI is client centered using a therapeutic style to assist clients to explore and resolve ambivalence toward change. Eliciting change talk encourages the patient to explore their own positive reasons or benefits for changing behavior, as well as identifying potential disadvantages of not changing behaviors. Patients are asked to identify barriers to changing their behaviors as well as identifying potential solutions to overcome their barriers (Lavoie et al., 2014).

There have been limited studies on using MI with asthma management. In a pilot study using MI to improve adherence to medication compliance, results indicated that a brief MI intervention significantly improved adherence behavior among individuals with asthma who

Figure 4. My asthma wallet card.
Reprinted from http://www.nhlbi.nih.gov/files/docs/public/lung/asthma_walletcard.pdf. Copyright 2007 by National Heart, Lung, and Blood Institute; National Institutes of Health; U.S. Department of Health and Human Services.

were previously not well controlled and nonadherent with inhaled corticosteroids (Lavoie et al., 2014).

The following questions, adapted in part from an MI workshop by Dr. Lorraine Robbins, November 1, 2015, Michigan Sate University, and from the literature (Spoelstra et al., 2015), may be applicable in facilitating change with a variety of health behaviors including self-asthma management. MI may be broken down into simple strategies. First start with an introduction explaining that as a team along with the PCP, you will help the patient set goals to make managing asthma at home easier. Then, refer to the following:

1. Be curious. Ask What? How? When? Where? Say: Tell me more, What is getting in the way of your asthma being controlled? (Asking open-ended questions lets the patient tell their story and may lead to information that might not otherwise have been elicited).
2. Be affirming, positive, open, and accepting. Keep the topic patient centered.
3. Reflect on what the patient has said, attempting to affirm what the patient meant by restating it in a different way.
4. Ask permission to provide information such as, "I have some information that might be of interest to you, would you like to hear it"?
5. Evoke change talk: "How would your life be different if your asthma was controlled"?
6. Summarize change—summaries are longer than reflections and are used to transition to another topic, provide a recap of your discussion, and discuss both sides of ambivalence the patient shared with you. For example, "You told me you have many reasons for not following your asthma management plan; you also said that your family will stop bugging you to take your medicine and that you will be able to do things without feeling short of breath. On the other hand, you say that you don't like taking medicine every day. Did I get it right?"
7. Client should be doing most of the talking.
8. Goal setting. Ask the patient to name three goals he or she has for asthma self-management. What are your ideas for taking your asthma medicine daily?
9. Assess motivation for change. How confident are you that you will make this change happen? Please rate your motivation on a scale of 1 to 10 with 1 no confidence or motivation to 10, which is highly confident and motivated. For those who said less than 10, ask them why they chose that number and not a 10.
10. End on a positive note stating that you are confident the person will obtain their goals because of what they have told you about achieving their goals.

Conclusion

This article describes six strategies for home care clinicians to promote optimal asthma management for home care patients. Utilizing MI along with patient education may be an effective method for helping patients with asthma that can make healthy lifestyle changes. Understanding barriers patients face in controlling their asthma, working simultaneously with the patient and their PCP, and providing education and tools may help increase self-management of asthma, and contribute to patients living a healthy productive life. ⌂

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